

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An exposure apparatus that exposes a pattern of a reticle onto a substrate, the exposure apparatus comprising:
 - a projection system to project the pattern onto the substrate;
 - a holder connected to the projection system to hold the projection system;
 - a support member that supports the projection system by the holder;
 - a stage that holds and moves one of the substrate and the reticle, the stage is not supported by the support member;
 - a damper that isolates the projection system from the stage;
 - a detector to detect information concerning displacement of the projection system;
 - an actuator having a pair of piezoelectric elements coupled to arranged on the holder to actuate the holder in a two dimensional plane perpendicular to an axis of the projection system; and
 - a driver connected to the actuator to drive the actuator in response to a detection result of the detector to suppress a strain of the holder resulting from a resonance of the projection system.
2. (Cancelled)
3. (Original) The exposure apparatus of claim 1, wherein the detector is arranged on at least one of the projection system and the holder.
4. (Original) The exposure apparatus of claim 1, wherein the detector includes an acceleration sensor.

5. (Original) The exposure apparatus of claim 1, wherein the detector includes a distortion sensor.

6. (Original) The exposure apparatus of claim 1, wherein the detector is arranged in a vicinity of the holder.

7. (Original) The exposure apparatus of claim 1, wherein the actuator is arranged in a vicinity of a relatively weak part of the holder.

8. (Canceled)

9. (Original) The exposure apparatus of claim 1, wherein the detector includes an acceleration sensor mounted to the projection system and a distortion sensor mounted to the holder.

10. (Currently Amended) The exposure apparatus of claim 1, wherein the actuator is mounted on an adapter a plate that is releasably attached to the holder.

11. (Original) The exposure apparatus of claim 1, wherein the projection system is a projection optical system.

12. (Canceled)

13. (Canceled)

14. (Previously Presented) The exposure apparatus of claim 1, wherein the stage is a substrate stage that holds and moves the substrate.

15. (Previously Presented) The exposure apparatus of claim 14, wherein the exposure apparatus is a scanning exposure apparatus, and the substrate stage moves while the pattern is projected onto the substrate.

16. (Previously Presented) The exposure apparatus of claim 1, wherein the stage is a reticle stage that holds and moves the reticle.

17. (Previously Presented) The exposure apparatus of claim 16, wherein the exposure apparatus is a scanning exposure apparatus, and the reticle stage moves while the pattern is projected by the projection system.

18. (Currently Amended) A method of making an exposure apparatus that exposes a pattern of a reticle onto a substrate, the method comprising:

providing a projection system to project the pattern onto the substrate;

providing a holder connected to the projection system to hold the projection system;

providing a support member that supports the projection system by the holder;

providing a stage that holds and moves one of the substrate and the reticle, the stage is not supported by the support member;

providing a damper that isolates the projection system from the stage;

providing a detector to detect information concerning displacement of the projection system;

providing an actuator on having a pair of piezoelectric elements coupled to the holder to actuate the holder in a two dimensional plane perpendicular to an axis of the projection system; and

providing a driver connected to the actuator to drive the actuator in response to a detection result of the detector to suppress a strain of the holder resulting from a resonance of the projection system.

19. (Canceled)

20. (Original) The method of claim 18, wherein the detector is arranged on at least one of the projection system and the holder.

21. (Original) The method of claim 18, wherein the detector includes an acceleration sensor.

22. (Original) The method of claim 18, wherein the detector includes a distortion sensor.

23. (Original) The method of claim 18, wherein the detector is arranged in a vicinity of the holder.

24. (Original) The method of claim 18, wherein the actuator is arranged in a vicinity of a relatively weak part of the holder.

25. (Canceled)

26. (Currently Amended) The method of claim 18, further comprising mounting the actuator on ~~an adapter~~ a plate that is releasably attached to the holder.

27. (Canceled)

28. (Previously Presented) The method of claim 18, wherein the stage is a substrate stage that holds and moves the substrate.

29. (Previously Presented) The method of claim 18, wherein the stage is a reticle stage that holds and moves the reticle.

30. (Currently Amended) A method of exposing a pattern of a reticle onto a substrate through a projection system, the method comprising:

holding the projection system with a holder;

supporting the projection system to a support member by the holder;

moving a stage that holds one of the substrate and the reticle, the stage is not supported by the support member;

isolating the projection system from the stage;

detecting information concerning displacement of the projection system; and

driving an actuator having a pair of piezoelectric elements coupled to mounted
on the holder in response to the detected information to suppress a strain of the holder
resulting from a resonance of the projection system, the pair of piezoelectric elements

actuating the holder in a two dimensional plane perpendicular to an axis of the projection system.

31. (Canceled)

32. (Original) The method of claim 30, wherein the information concerning displacement of the projection system is detected by a detector arranged on at least one of the projection system and the holder.

33. (Original) The method of claim 30, wherein the information concerning displacement of the projection system is detected by an acceleration sensor.

34. (Original) The method of claim 30, wherein the information concerning displacement of the projection system is detected by a distortion sensor.

35. (Original) The method of claim 30, wherein the information concerning displacement of the projection system is detected by a detector arranged in a vicinity of the holder.

36. (Original) The method of claim 30, wherein the actuator is arranged in a vicinity of a relatively weak part of the holder.

37. (Canceled)

38. (Currently Amended) The method of claim 30, wherein the actuator is mounted on an adapter a plate that is releasably attached to the holder.

39. (Canceled)

40. (Previously Presented) The method of claim 30, wherein the stage is a substrate stage that holds the substrate.

41. (Previously Presented) The method of claim 30, wherein the stage is a reticle stage that holds the reticle.

42. (Previously Presented) The exposure apparatus of claim 1, further comprising a reaction system that manages a reaction force exerted by a movement of the stage.

43. (Previously Presented) The method of claim 18, further comprising:
providing a reaction system that manages a reaction force exerted by a
movement of the stage.

44. (Previously Presented) The method of claim 30, further comprising:
managing, in a reaction system, a reaction force exerted by a movement of the
stage.

45. (Currently Amended) An exposure apparatus that exposes a pattern of a reticle
onto a substrate, the exposure apparatus comprising:
a projection system to project the pattern onto the substrate;
a support member to support the projection system through a flange of the
projection system;
a stage that holds and moves one of the substrate and the reticle, the stage is
not supported by the support member;
a damper that isolates the projection system from the stage;
a detector to detect information concerning displacement of the projection
system;
~~an actuator arranged on the support member coupled to the flange; and~~
a driver connected to the actuator to drive the actuator in response to a
detection result of the detector to suppress an influence of resonance of the projection system.

46. (Previously Presented) The exposure apparatus of claim 45, wherein the driver
suppresses a strain of the support member.

47. (Canceled)

48. (Previously Presented) The exposure apparatus of claim 45, wherein the
actuator includes piezoelectric elements.

49. (Previously Presented) The exposure apparatus of claim 45, wherein the detector is arranged on at least one of the projection system and the support member.

50. (Previously Presented) The exposure apparatus of claim 45, wherein the detector includes an acceleration sensor.

51. (Previously Presented) The exposure apparatus of claim 45, wherein the detector includes a distortion sensor.

52. (Previously Presented) The exposure apparatus of claim 45, wherein the stage is a substrate stage that holds and moves the substrate.

53. (Previously Presented) The exposure apparatus of claim 45, wherein the stage is a reticle stage that holds and moves the reticle.

54. (New) The exposure apparatus of claim 1, wherein the holder comprises a kinematic support structure.

55. (New) The exposure apparatus of claim 45, wherein the actuator is located beneath a lower surface of the flange.

56. (New) An exposure apparatus that exposes a pattern onto a substrate, the exposure apparatus comprising:

a projection system that projects the pattern onto the substrate, and that has a flange;

a support member that supports the projection system through the flange of the projection system;

a plate coupled to the flange;

a pair of piezoelectric elements coupled to the plate; and

a driver connected to the pair of piezoelectric elements to suppress a vibration of the projection system.

57. (New) The exposure apparatus of claim 56, wherein the pair of piezoelectric elements is arranged in a vicinity of a relatively weak part of the flange.

58. (New) The exposure apparatus of claim 56, wherein the plate is arranged on an upper surface of the flange.

59. (New) The exposure apparatus of claim 56, wherein the pair of piezoelectric elements is coupled to the plate by an adhesive.

60. (New) The exposure apparatus of claim 56, wherein the support member comprises a kinematic support structure.

61. (New) The exposure apparatus of claim 56, wherein the driver comprises an amplifier.

62. (New) The exposure apparatus of claim 56, further comprising a detector to detect information concerning displacement of the projection system.

63. (New) The exposure apparatus of claim 62, wherein the detector is attached near a top of the projection system.

64. (New) An exposure apparatus that exposes a pattern onto a substrate, the exposure apparatus comprising:

a projection system that projects the pattern onto the substrate;

a support member that supports the projection system, the support member having at least one of: (i) a plurality of hole members and (ii) a plurality of notch members;

a pair of piezoelectric elements coupled to the support member and that are actuatable in a two dimensional plane perpendicular to an axis of the projection system; and

a driver connected to the pair of piezoelectric elements to actuate the pair of piezoelectric elements to suppress a vibration of the projection system.

65. (New) The exposure apparatus of claim 64, wherein the support member comprises a kinematic support structure.

66. (New) The exposure apparatus of claim 64, wherein the driver comprises an amplifier.

67. (New) The exposure apparatus of claim 64, further comprising a detector to detect information concerning displacement of the projection system.

68. (New) The exposure apparatus of claim 67, wherein the detector is attached near a top of the projection system.